

Meta-Analysis for Comparison between Antireflux Surgery With or Without Endoscopic Management of Barrett's Esophagus

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Abstract

Background: In patients with BE, anti-reflux surgery aims to sustainable control reflux symptoms and heal reflux induced esophageal mucosal inflammation and prevent progression of BE to adenocarcinoma. Endoscopic resection of visible lesions if any, followed by ablation of the rest of the BE epithelium is the current standard of care for management of BE with confirmed dysplasia. Although the current literature describes multiple endoscopic and anti-reflux techniques for the management of BE, there is no published evidence on the efficacy of anti-reflux surgery followed by endoscopic management on the outcomes of BE.

Aim of Study: The objective of this study was to compare between anti-reflux surgery with or without endoscopic management of BE.

Patients and Methods: In the present study, we searched Medline via PubMed, SCOPUS, Web of Science, Cochrane Central Register of Controlled Trials (CENTRAL), and Google Scholar. The search retrieved 2089 unique records. We then retained 57 potentially eligible records for full-texts screening. Finally, 6 studies were included.

Results: In the present systematic review and meta-analysis, five studies reported the rates of recurrence. The overall effect estimates showed the rate of recurrence was 5.7% (95% CI 1.2-10.2%). In the present systematic review and meta-analysis, five studies reported the overall complications rate. The overall effect estimates showed the overall complications rate was 7.3% (95% CI 4.1-10.6%), mainly stricture and perforation.

Conclusion: Endoscopic procedures after anti-reflux surgery is a safe modality, with high rate of success in complete eradication of BE in symptomatic GERD patients, especially those with severe anatomical impairment in distal esophageal segment. As a concurrent procedure, endoscopic procedures may be beneficial in the terms of reducing the early recurrence rates, which seems to be important issue during the management of BE. By doing synchronous endoscopic procedures and fundoplication, one might observe a true anatomy of esophagogastric junction in its entirety and might be able to truly observe the distal extent of columnar esophagus.

Key Words: Antireflux surgery – Endoscopic management – Barrett's esophagus.

Introduction

BARRETT'S esophagus is a condition resulting from chronic gastro-esophageal reflux disease with a documented risk of esophageal adenocarcinoma. The classic definition of Barrett's Esophagus (BE) comprises the presence of columnar epithelium with prominent goblet cells indicative of Intestinal Metaplasia (IM) populating the tubular esophagus proximal to the anatomic squamo-columnar junction. American association of gastroenterology, recommended the presence of IM for the diagnosis of BE while the British society of gastroenterology guidelines do not require the presence of IM for the diagnosis of BE. Presently, the diagnosis of BE is based on a combination of endoscopic and histologic criteria. The diagnosis of BE is established when Intestinal Metaplasia (IM) is found in biopsy specimens obtained from salmon colored mucosa in the distal esophagus proximal to the Gastro-Esophageal Junction (GEJ) [1].

Acid suppressive therapy, specifically Proton Pump Inhibitors (PPIs), has been shown to improve symptoms and to heal and prevent relapse of erosive esophagitis in patients with BE. Evidence to support use of PPIs, in patients with BE solely to reduce risk of progression to dysplasia or cancer is indirect and has not been proven in a long-term controlled trial. Epidemiologic data suggest a lower risk of progression in PPI users. There is also some evidence to suggest that long-term therapy may induce regression of IM and promote the development of squamous islands [2].

As development of BE is based on gastro-esophageal reflux, a potential concept would be to

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stop reflux by anti-reflux surgery and thereby interrupt the mechanisms of malignant transformation. Fundoplication effectively controls reflux symptoms in most patients [3]. Some authors found that surgical control of reflux disease has not been found to be associated with a decrease in the incidence of esophageal cancer [4].

Before the advent of endoscopic therapies, esophagectomy was the primary treatment option for patients with High Grade Dysplasia (HGD). Esophagectomy offers the most definite treatment in patients with BE with HGD (in particular in patients with multifocal HGD since it eliminates all of the Barrett's epithelium preventing the risk of progression. In patients with HGD, a benefit of esophagectomy includes the treatment of an occult carcinoma (the incidence of occult adenocarcinoma, ranging from 0% to 73%) [5].

The standard surgical resection in most patients includes a total esophagectomy with a transhiatal or transthoracic approach, and reconstruction with gastric pull up or tubularized gastric conduit and the anastomosis performed in the neck or the high chest. In some cases esophageal resection could be performed minimally invasively. Limited vagal-sparing surgery like esophageal stripping or Merendino's operation is currently indicated in multifocal high-grade neoplasia or mucosal Barrett's carcinoma which cannot be managed by endoscopic approach [6].

It has always been the aim of therapists-both gastroenterologists and surgeons-not to wait until a patient developed dysplasia or cancer, but to initiate complete regression of Barrett's esophagus by means of either drugs or surgery in order to prevent malignant degeneration. Endoscopic treatment is focused on destruction of the existing metaplastic-dysplastic tissue using different modalities that eliminate the mucosa. The theory behind endoscopic treatment is that the injury of the meta-plastic dysplastic BE combined with vigorous acid suppression or with anti-reflux surgery would lead to reversion of the BE to squamous epithelium and reduce the risk of progression to cancer [7].

Endoscopic treatment modalities include endoscopic resection techniques such as endoscopic mucosal resection and endoscopic submucosal dissection and endoscopic ablation therapy, such as Argon Plasma Coagulation (APC), laser ablation, Photodynamic Therapy (PDT), Radiofrequency Ablation (RFA), and cryo-therapy [8,9].

Aim of the work:

Is to estimate the efficacy of endoscopic therapy for Barrett's esophagus by assessing the safety and effectiveness of endoscopic resection or ablation following anti-reflux and compare it with anti-reflux surgery without endoscopic management of Barrett's esophagus.

Material and Methods

We performed this systematic review and meta-analysis in accordance to the recommendations of the Preferred Reporting Items for Systematic Reviews and Meta-Analyses (PRISMA) statement and Meta-analysis of Observational Studies in Epidemiology (MOOSE) statement. PRISMA and MOOSE are reporting checklists for Authors, Editors, and Reviewers of meta-analyses of interventional and observational studies. According to International Committee of Medical Journal Association (ICJME), reviewers must report their findings according to each of the items listed in those checklists [10].

Study selection and eligibility criteria:

The present review included studies that fulfilled the following criteria:

- 1- Studies that included adults' patients with diagnosed with low-or high-grade Barrett's esophagus.
- 2- Studies that assessed the safety and effectiveness of endoscopic resection or ablation following anti-reflux surgery for Barrett's esophagus.
- 3- Studies that reported any of the following outcomes: Complete eradication of intestinal metaplasia, progression, recurrence, malignancy and complication.
- 4- Studies that were randomized controlled trials (RCTs), comparative studies, or prospective cohort studies.

We excluded review articles, non-English studies, theses, dissertations and conference abstracts, and trials with unreliable date for extraction.

Search strategy and screening:

An electronic search was conducted from the inception till June 2020 in the following bibliographic databases: Medline via PubMed, SCOPUS, Cochrane Central Register of Controlled Trials (CENTRAL), and Web of Science to identify relevant articles. We used different combinations of the following queries: Radiofrequency ablation, transoral incisionless fundoplication, medigus ultrasonic surgical endostapler, dysplasia, Barrett's esophagus, esophagitis.

Screening:

Retrieved citations were imported into EndNote X7 for duplicates removal. Subsequently, unique citations were imported into an Excel sheet and screened by two independent reviewers; the screening was conducted in two steps: Title and abstract screening, followed by a full-texts screening of potentially eligible records.

Data extraction:

Data entry and processing were carried out using a standardized Excel sheet and reviewers extracted the data from the included studies. The extracted data included the following domains: (1) Summary characteristics of the included studies; (2) Baseline characteristics of studied populations; and (3) Study outcomes. All reviewers' independently extracted data from the included articles and any discrepancies were solved by discussion.

Dealing with missing data:

Missing Standard Deviation (SD) of mean change from baseline was calculated from standard error or 95% Confidence Interval (CI) according to Altman [11].

Direct meta-analysis:

Continuous outcomes were pooled as Mean Difference (MD) or Standardized Mean Difference (SMD) using inverse variance method, and dichotomous outcomes will be pooled as Relative Risk (RR) using Mantel-Haenszel method. The random-

effects method was used under the assumption of existing significant clinical and methodological heterogeneity. We performed all statistical analyses using Review Manager (RevMan) 5.3 or open meta-analyst for windows.

Assessment of heterogeneity:

We assessed heterogeneity by visual inspection of the forest plots, chi-square, and I-square tests. According to the recommendations of Cochrane Handbook of Systematic Reviews and meta-analysis, chi-square *p*-value less than 0.1 denote significant heterogeneity while I-square values show no important heterogeneity between 0% and 40%, moderate heterogeneity from 30% to 60%, substantial heterogeneity from 50% to 100%. If any trials were judged to affect the homogeneity of the pooled estimates, we planned to perform a sensitivity analysis to assess outcomes with and without the trials that were affecting the homogeneity of the effect estimates.

Results

In the present study, we searched Medline via PubMed, SCOPUS, Web of Science, Cochrane Central Register of Controlled Trials (CENTRAL), and Google Scholar from their inception till April 2020. The search retrieved 2089 unique records. We then retained 57 potentially eligible records for full-texts screening. Finally, 13 studies were included Fig. (1).

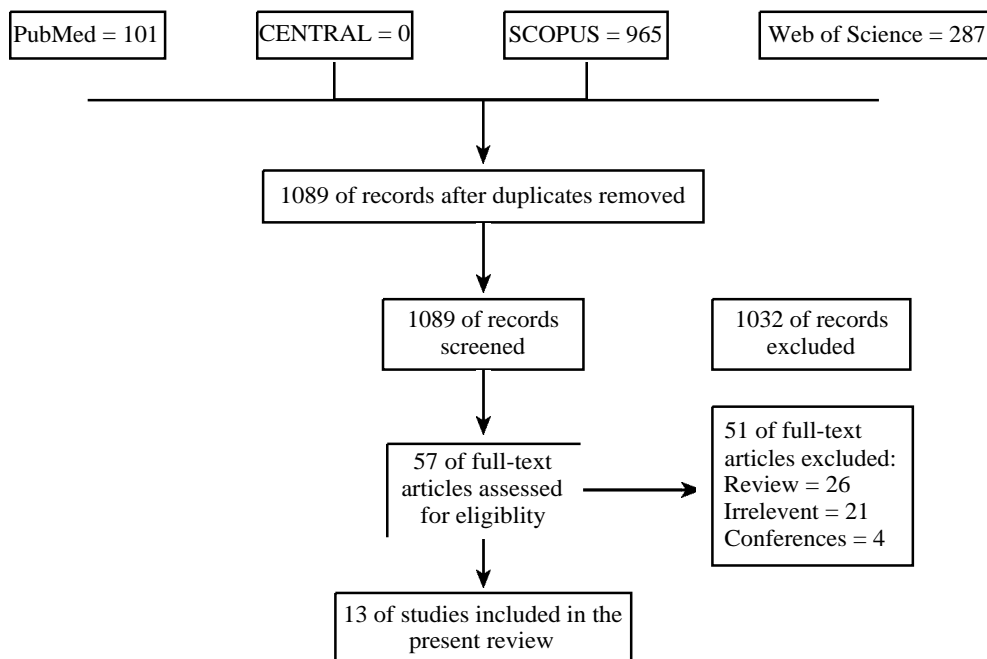


Fig. (1): PRISMA flow-chart.

ARS plus Endoscopic Approach (No. = 6 studies):

Table (1): Summary characteristics of the included studies.

Author Title	Year	Country	Design	Patients	Type of ARS	Endoscopic Approach	Control	No. of patients	Median follow-up in months	Main findings
• Johnson et al.,	2014	USA	Retrospective	Patients with low or high grade BE	Nissen fundoplication	RFA ± EMR	None	49	24	Fundoplication is an important strategy to achieve and maintain GR-IM.
• Skrobčić	2015	Serbia	Prospective	Patients with low or high grade BE	Laparoscopic Nissen fundoplication	RFA	PPIs	56	24	RFA is a safe procedure, with high rate of success in complete eradication.
• O'Connell	2011	USA	Retrospective	Patients with low or high grade BE	Nissen fundoplication	RFA	PPIs	47	15 (12-24)	Patients who had fundoplication in conjunction with endoluminal radiofrequency ablation were more likely to achieve durable ablation compared with patients who were treated with proton pump inhibitor therapy.
• Shaheen et al.,	2013	USA	Retrospective	Patients with low or high grade BE	Nissen fundoplication	RFA	None	301	N/A	Prior fundoplication was associated with similar adverse event and efficacy rates when compared with medical management.
• Komanduri	2017	USA	Prospective	Patients with low or high grade BE	Nissen fundoplication	RFA ± EMR	None	221	11.6 ± 10.2	EET has long-term durability with low recurrence rates providing early evidence for extending endoscopic surveillance intervals after EET.
• Goers	2011	USA	Retrospective	Patients with low or high grade BE	Laparoscopic Nissen fundoplication	RFA	None	10	N/A	Endoscopic radiofrequency ablation of BE at the time of laparoscopic fundoplication is feasible and can effectively treat BE lesions.

Table (2): Baseline and outcomes of the included studies.

Author	Year	Age (y)	% Male	BE length (mean or median), cm	Presence of hiatal hernia	BE histology IM	LESP (mmHg)	RFA session
Johnson et al.,	2014	61	82%	6.5	98%	43.80%	N/A	3.7
Skrobčić	2015	47.3±10.8	66%	4.3±2.1	87.50%	67.90%	4.2±2.9	2.1±0.7
O'Connell	2013	N/A	N/A	3 (2-12)	N/A	N/A	N/A	N/A
Shaheen et al.,	2013	61.4 (11.2)	75%	4.3 (3.4)	N/A	22%	N/A	2.8 (1.6)
Komanduri	2017	65.4 (11.6)	75%	5.3 (3.3) 5	96%	101	N/A	2.2 (1.1)
Goers	2013	58 16.6	70%	6.4 4.78	60%	70%	N/A	4.39 1.99

Table (3): Outcomes of the included studies.

Author	Year	Total	CE-D (%)	CE-IM (%)	Recurrence
Johnson et al.,	2014	49	16	26	7
Skrobie	2015	56	47	33	1
O'Connell	2013	19	N/A	N/A	0
Shaheen et al.,	2013	136	118	97	10
Komanduri	2017	221	170	205	10
Goers	2013	10	6	4	N/A

CE-D : Complete Eradication of Dysplasia.

CE-IM: Complete Eradication of Intestinal Metaplasia.

ARS alone (No. = 7 studies):

Table (5): Summary characteristics of the included studies.

Author	Title	Year	Country	Design	Patients	Type of ARS	Control	No. of patients	Medication	Median follow-up	Main findings
• Lagergren et al.	The risk of esophageal adenocarcinoma after antireflux surgery.	2010	Sweden	Prospective	Patients with low or high grade BE.	NF, partial fundoplication.	N/A	14102	N/A	8.5 (42)	Fundoplication effectively to achieve and maintain CR-IM.
• Kauttu et al.	Esophageal adenocarcinoma arising after antireflux surgery: A population-based analysis.	2011	Finland	Prospective	Patients with low or high grade BE.	NF/partial fundoplication, Roux-en-Y reconstruction	N/A	17643	N/A	7.6 (unknown)	Fundoplication effectively to achieve and maintain CR-IM.
• Oberg et al.	Barrett esophagus: Risk factors for progression to dysplasia and adenocarcinoma.	2005	Sweden	Prospective	Patients with low or high grade BE.	NF, hill gastroplexy, partial fundoplication	MT	46 ARS; 94 MT	H2RA, PPI	7.5 (11.5); 6.7	Fundoplication effectively to achieve and maintain CR-IM.
• Tran et al.	Fundoplication and the risk of esophageal cancer in gastroesophageal reflux disease: A veterans affairs cohort study.	2005	US	Prospective	Patients with low or high grade BE.	Fundoplication	MT	946 ARS, 1892 MT	N/A	11.8 (unknown)	Fundoplication effectively to achieve and maintain CR-IM.
• Gatenby	Treatment modality and risk of development of dysplasia and adenocarcinoma in columnar-lined esophagus.	2009	UK	Prospective	Patients with low or high grade BE.	N/A	MT	41 ARS, 697 MT	H2RA, PPI	6.19 (unknown)	Fundoplication effectively to achieve and maintain CR-IM.
• Csendes	Dysplasia and Adenocarcinoma after classic antireflux surgery in patients with Barrett's Esophagus.	2002	Chile	Prospective	Patients with low or high grade BE.	N/A	No	161		6	Patients with Barrett's esophagus who undergo antireflux surgery need close and long-term endoscopic and histologic surveillance because dysplasia or even adenocarcinoma can appear at late follow-up.
• Patt	Barrett's esophagus: A surgical disease.	2002	USA	Prospective	Patients with low or high grade BE.	N/A	No	113			Laparoscopic fundoplication was highly successful in controlling symptoms of GERD in patients with Barrett's metaplasia

Table (4): Complications rate of the included studies.

Author	Year	Total	No. of overall adverse events	Strictures	Perforation	Bleeding	Pain
Johnson et al.,	2014	49	5	5	0	-	-
Skrobie	2015	56	8	7	0	1	-
O'Connell	2013	19	N/A	N/A	N/A	N/A	N/A
Shaheen et al.,	2013	136	6	3	3	-	-
Komanduri	2017	221	15	10	0	-	-
Goers	2013	10	2	1	1	-	-

Table (6): Baseline and outcomes of the included studies.

Author	Year	Age (y)	% Male	BE length (mean or median), cm	Presence of hiatal hernia	HGD/EAC
• Lagergren et al.	2010	61.4 (11.2)	72%	N/A	65%	0/39
• Kauttu et al.	2011	60.3 (22)	79%	N/A	72%	0/29
• Oberg et al.	2005	64.5 (51-89)	67%	N/A	N/A	0/0; 6/1
• Tran et al.	2005	70.1	90%	N/A	N/A	0/8
• Gatenby	2009	62.1 (50-86)	N/A	N/A	N/A	0/0
• Csendes	2002	58.3	60%	N/A	N/A	N/A
• Patti	1999	N/A	N/A	N/A	N/A	N/A

Table (7): Outcomes of the included studies.

Author	Year	Total	CE-D (%)	CE-IM (%)	Recurrence
Lagergren et al.	2010	14102	N/A	N/A	N/A
Kauttu et al.	2011	17643	N/A	N/A	N/A
Oberg et al.	2005	46	N/A	N/A	N/A
Tran et al.	2005	946	N/A	N/A	N/A
Gatenby	2009	41	N/A	N/A	N/A
Csendes	2002	161	126	N/A	17
Patti	1999	113	N/A	N/A	3

Discussion

Around 12% percent of patients with chronic GERD develop mucosal metaplasia so called Barrett's Esophagus (BE) which is, via low-and high-grade dysplasia, associated with an up to 125-fold increased risk for esophageal adenocarcinoma. BE, the only known precursor for esophageal adenocarcinoma, is a potentially reversible conditions if the reflux-induced chronic inflammatory process is treated effectively [12].

In patients with BE, anti-reflux surgery aims to sustainable control reflux symptoms and heal reflux induced esophageal mucosal inflammation and prevent progression of BE to adenocarcinoma. After anti-reflux surgery significant levels of regression from metaplastic Barrett's to non-metaplastic epithelium as well as from dysplastic to non-dysplastic BE have been observed and a randomized trial showed that sufficient surgical reflux control reduces the risk of Barrett's progression significantly when compared to medical treatment [13].

On the other hand, BE was traditionally treated by esophagectomy. However, the pendulum has swung from surgical to endoscopic management over the last 2 decades owing to the lower morbidity, lower cost and similar long-term survival rates with endoscopic treatment compared to esophagectomy. Endoscopic resection of visible lesions if any, followed by ablation of the rest of the BE

epithelium is the current standard of care for management of BE with confirmed dysplasia.

Although the current literature describes multiple endoscopic and anti-reflux techniques for the management of BE, there is no published evidence on the efficacy of anti-reflux surgery followed by endoscopic management on the outcomes of BE. The objective of this study was to compare between anti-reflux surgery with or without endoscopic management of BE [14].

In the present study, we searched Medline via PubMed, SCOPUS, Web of Science, Cochrane Central Register of Controlled Trials (CENTRAL), and Google Scholar. The search retrieved 2089 unique records. We then retained 57 potentially eligible records for full-texts screening. Finally, 6 studies were included.

Males, especially Caucasian males, have a strong predilection for the development of BE, with a male:female ratio of 2-3:1 in most studies. Age at diagnosis can vary widely, as many individuals are asymptomatic and undergo diagnostic endoscopy for other reasons. BE on average is diagnosed in the 6th-7th decade of life, but may develop far earlier [15].

In the present systematic review and meta-analysis, we observed that the majority of the patients were males and aged more than 60 years old.

In agreement with our findings, Ford and colleagues [16] conducted a retrospective case-control analysis within a cross-sectional study to determine risk of BE in relation to sociodemographic variables in a large United Kingdom population. Barrett's esophagus was more common in males aged more than 60 years old.

Likewise, Kubo and colleagues [17] conducted a case-control study on a total of 1102 cases with BE. Barrett's esophagus was more common in males aged more than 60 years old.

Multiple environmental factors are strongly associated with BE. These factors, such as obesity, GERD, and hiatal hernias are more common in developed countries [18].

In the present study, we found that the prevalence of hiatal hernia among BE cases ranged from 60-98%.

In line with our findings, Wu and colleagues [19] conducted a population-based, case-control study that included BE (n=443), and 1356 controls.

Hiatal hernia emerged as significant independent risk factor for BE.

Likewise, Cameron [20] assessed the prevalence and size of hernias in patients with BE. A 2-cm or longer hernia was found in 96% of 46 patients with BE.

Radiofrequency Ablation (RFA) is currently the most widely used technique to treat BE with dysplasia due to its ability to deliver uniform ablation to a consistent depth of the esophageal wall. RFA causes tissue necrosis by using direct contact current to generate thermal injury. Circumferential BE longer than 3cm is ablated by circumferential technique and non-circumferential segments or segments <3cm are ablated by focal technique [21].

On the other hand, in patients who have nodular BE with dysplasia/EAC limited to the mucosa or visible lesions with high-grade dysplasia, resection of the lesions is done by Endoscopic Mucosal Resection (EMR) followed by ablation of the rest of the Barrett's mucosa by RFA because there can be 30% risk of metachronous lesions in the rest of the mucosa [14].

In the present systematic review and meta-analysis, four studied used RFA alone and two studies used RFA plus EMR.

Barrett's esophagus is a precancerous state defined by the replacement of normal esophageal squamous mucosa by Intestinal Metaplasia (IM). The goal of management of patients with dysplastic BE is to achieve Complete Eradication of Intestinal Metaplasia (CE-IM) [22].

In the present meta-analysis, five studies reported the rates of complete eradication of intestinal metaplasia. The overall effect estimates showed the rate of complete eradication of intestinal metaplasia was 65.5% (95% CI 47-84%).

To the best of our knowledge, no previous systematic review and meta-analysis has assessed the impact of anti-reflux surgery plus endoscopic resection on the CE-IM of patients with BE.

However, the results of primary studies support our findings. For example, Goers and colleagues [23] conducted a study on 8 patients, of which 6 was presented with major hiatal hernia requiring reduction. The procedure was concomitant RFA during the laparoscopic fundoplication. CE-IM was achieved in 62.5% of the patients.

Skrobić and colleagues [24] performed RFA after laparoscopic fundoplication in 56 patients with BE, complete endoscopic resolution of BE was observed in 83.92% patients (86.84% IM and 77.77% LGD).

Likewise, Komanduri and colleagues [25] aimed to determine the effectiveness and durability of EET under a structured reflux management protocol. Out of 221 patients enrolled. An overall CE-IM of 93% was achieved within 11.6 ± 10.2 months.

Regarding the rate of complete eradication of dysplasia in the present study, we found that five studies reported the rates of complete eradication of dysplasia. The overall effect estimates showed the rate of complete eradication of dysplasia was 69.7% (95% CI 54.4-85%).

Again, to the best of our knowledge, no previous systematic review and meta-analysis has assessed the impact of anti-reflux surgery plus endoscopic resection on the complete eradication of dysplasia of patients with BE.

In 2015, Johnson and colleagues [27] performed a multi-institutional retrospective review of patients undergoing endotherapy followed by Nissen fundoplication. A total of 49 patients underwent RFA \pm EMR followed by Nissen fundoplication. The rate of complete remission of dysplasia was 62.5%.

Recurrence of IM or dysplasia can occur after CE-IM. Conflicting data exist with regard to recurrence rates of IM and dysplasia after achieving CE-IM in BE patients [28].

In the present systematic review and meta-analysis, five studies reported the rates of recurrence. The overall effect estimates showed the rate of recurrence was 5.7% (95% CI 1.2-10.2%).

In concordance with our findings, O'Connell and Velanovich [29] recruited patients who underwent endoscopic endoluminal RFA with the BARRx device (BARRx Medical, Sunnyvale, CA). Of 77 patients ablated, 47 had documented endoscopic follow-up at 12 months or longer following the ablation. Of these, 19 patients had Nissen fundoplication before, at the same time, or after ablation. The rate of recurrence was 5.2%.

Similarly, Komanduri and colleagues [25] reported that recurrence occurred in 13 patients [IM in 10 (4.8%), dysplasia in 3 (1.5%)] during a mean follow-up of 44 ± 18.5 months.

Notably, we found that the rate of recurrence after ARs alone was 6.4% (95% CI 1.4-14.1%).

We could not find any clinically-relevant difference between ARS alone and ARS plus endoscopic procedures.

Anti-reflux surgery and RFA are safe procedures due to the limited depth of ablation. The most common complication after both modalities is stricture formation which occurs in 5%-6% patients. The other complications include post-procedure chest pain (3.8%), bleeding (1%) and perforation (0.6%) [14].

In the present systematic review and meta-analysis, five studies reported the overall complications rate. The overall effect estimates showed the overall complications rate was 7.3% (95% CI 4.1-10.6%), mainly stricture and perforation.

In the present systematic review and meta-analysis, we assessed the impact of ARS alone on the risk of adenocarcinoma. The overall effect estimates showed no reduction in the risk of adenocarcinoma after ARS (RR 0.85 95% CI 0.14-5.06). These results indicate the superior role of adding endoscopic procedures to the ARS in the setting of BE.

In agreement with our findings, Maret-Ouda and colleagues [26] conducted a systematic review on 10 studies comparing adenocarcinoma risk after antireflux surgery with nonoperated GERD patients. The adenocarcinoma risk after antireflux surgery does not seem to revert to that of the background population.

Likewise, Spechler et al., [30] conducted a follow-up study of a prospective randomized trial comparing medical therapy (n=165) and antireflux surgery (n=82) in patients with severe GER [16]. Only half these patients were available for the follow-up study. Esophageal adenocarcinoma developed in one patient in each group, yielding a risk of 1/437 patientyears in the nonsurgical group and 1/746 patient-years in the surgical group. However, only 108 patients had Barrett's esophagus, yielding a cancer risk of 1/259 patient-years, and outcome differences across treatments were not studied in the subgroup with Barrett's esophagus. Furthermore, the antireflux surgery failure rate was probably high, as 62% of patients continued to use antireflux medications after surgery, and only 10 of the 82 surgical patients underwent pH recordings post-operatively.

Conclusion:

In conclusion, endoscopic procedures after anti-reflux surgery is a safe modality, with high rate of success in complete eradication of BE in symptomatic

GERD patients, especially those with severe anatomical impairment in distal esophageal segment. As a concurrent procedure, endoscopic procedures may be beneficial in the terms of reducing the early recurrence rates, which seems to be important issue during the management of BE. By doing synchronous endoscopic procedures and fundoplication, one might observe a true anatomy of esophagogastric junction in its entirety and might be able to truly observe the distal extent of columnar esophagus.

This combination provides good protection for neosquamous epithelium and in selected group of patients could be offered as a first-line of treatment for BE. In the present systematic review and meta-analysis, we assessed the impact of ARS alone on the risk of adenocarcinoma. The overall effect estimates showed no reduction in the risk of adenocarcinoma after ARS. These results indicate the superior role of adding endoscopic procedures to the ARS in the setting of BE. Studies providing strong evidence to support or disprove a risk-reduction effect of antireflux therapy are impatiently awaited, particularly as the incidence of esophageal adenocarcinoma is rising sharply in industrialized countries.

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التحليل البعدي للمقارنة بين العلاج بجراحة إرتجاع المرئ مع أو بدون العلاج بالمنظار لمرضى المرئ باريت

المقدمة: تهدف الجراحة المضادة للإرتجاع فى المرضى الذين يعانون من مرئ باريت إلى السيطرة المستدامة على أعراض الإرتجاع وشفاء إلتهاب الغشاء المخاطى للمرئ الناتج عن الإرتجاع ومنع تطور مرئ باريت إلى سرطان.

الهدف من الدراسة: هو المقارنة بين الجراحة المضادة للإرتجاع يتبعها العلاج بتقنيات المنظار المختلفة لمرضى مرئ باريت أو إجراء عمليات الإرتجاع وحدها غير متبوعة بالعلاج بالمنظار لمرضى مرئ باريت.

المرضى وطرق العلاج: فى الإستعراض المنهجي الحالى والتحليل البعدي، لاحظنا أن غالبية المرضى كانوا من الذكور وأعمارهم أكثر من ٦٠ عاماً. وجدنا أن إنتشار فتق الحجاب الحاجز بين حالات مرئ باريت تتراوح بين ٦٠-٩٨٪. فى الإستعراض المنهجي الحالى والتحليل البعدي، إستخدمت أربع دراسات الإستئصال بالتردد الراديوى وحده وإستخدمت دراستان الإستئصال بموجات التردد الراديوى بالإضافة إلى إستئصال الغشاء المخاطى بالمنظار وقد كان هناك خمس دراسات قد سجلت عن معدلات إستئصال كامل للتحويل النسيجي المعوى. وكانت التقديرات العامة قد أظهرت أن معدل الإستئصال الكامل للتحويل النسيجي للأمعاء كان ٦٥.٥٪ (٩٥٪ CI ٤٧-٨٤٪).

النتائج: فيما يتعلق بمعدل الإستئصال الكامل لخلل التنسج فى هذه الدراسة، وجدنا أن خمس دراسات أبلغت عن معدلات الإستئصال الكامل لخلل التنسج. وقد أظهرت تقديرات التأثير العام أن معدل الإستئصال الكامل لخلل التنسج كان ٦٩.٧٪ (٩٥٪ CI ٥٤.٤-٨٥٪). فى الإستعراض المنهجي الحالى والتحليل البعدي، ذكرت خمس دراسات معدلات لتكرار رجوع مرض مرئ باريت. وقد أظهرت تقديرات التأثير العام أن معدل تكرار رجوع مرض مرئ باريت كان ٥.٧٪ (٩٥٪ CI ١.٢-١٠.٢٪). فى الإستعراض المنهجي الحالى والتحليل البعدي، ذكرت خمس دراسات معدل المضاعفات. أظهرت تقديرات التأثير العام أن معدل المضاعفات الإجمالى كان ٧.٣٪ (٩٥٪ CI ٤.١-١٠.٦٪). بشكل أساسى التضييق والإنتخاب.

الإستنتاج: يعتبر العلاج بالمنظار بعد الجراحة المضادة للإرتجاع طريقة آمنة، مع نسبة نجاح عالية فى الإستئصال الكامل لمرئ باريت فى مرضى إرتجاع المرئ المصحوبين بأعراض، وخاصة أولئك الذين يعانون من ضعف تشريحي شديد فى الجزء الأسفل من المرئ. كإجراء متزامن، قد يكون العلاج بالمنظار مفيد من حيث تقليل معدلات تكرار رجوع مرض مرئ باريت مبكراً، والتي يبدو أنها قضية مهمة أثناء علاج مرئ باريت.